IN THE CLAIMS

1. (Currently Amended) An X-ray tube for high dose rates~~,~~ ~~in which~~ comprising:

an anode and a cathode ~~are~~ being disposed opposite each other in a vacuumized internal chamber, electrons being able to be accelerated to the anode by ~~means of~~ impressible high voltage[[,]] for producing X-ray radiation from said anode;

the cathode comprising a thin layer of an electron emitting material, and ~~the cathode comprising~~ a substrate substantially transparent for X-ray radiation~~, wherein~~ such that the entire cathode is substantially transparent to X-ray radiation;

the X-ray tube ~~is designed as an anode~~ being constructed with said anode being a hollow cylinder ~~with~~ and said cathode being a coaxial cathode hollow cylinder positioned inside said anode; and

said anode constructed to emit X-ray radiation in a direction opposite to the direction of emitted electrons from said cathode back to and through said cathode to a target area situated within the confines of said cathode.

2. (Previously Presented) The X-ray tube according to claim 1, wherein the cathode closes the vacuumized internal chamber from the outside.

3. (Previously Presented) The X-ray tube according to claim 1, wherein the anode comprises gold and/or molybdenum and/or tungsten and/or a compound of the metals, for conversion of the electrons into X-ray radiation.

4. (Previously Presented) The X-ray tube according to claim 1, wherein the cathode comprises a thermionic emitter.

5. (Previously Presented) The X-ray tube according to claim 1, wherein the cathode comprises a cold emitter.

6. (Previously Presented) The X-ray tube according to claim 5, wherein the cold emitter comprises metal tips and/or graphite tips and/or carbon nano tubes.

7. (Currently Amended) A method for generating high dose rates with X-ray tubes, in which an anode and a cathode are disposed opposite each other in a vacuumized internal chamber, electrons being accelerated to the anode by ~~means of~~ impressible high voltage for producing X-ray radiation from said anode, a substrate substantially transparent for X-ray radiation (γ) being used in the cathode, and a thin layer or coating of an electron emitting material being applied to the

substrate such that the cathode is substantially transparent to X-ray radiation, wherein;

~~used as the~~ said anode is an anode hollow cylinder with a coaxial cathode hollow cylinder inside to direct X-ray radiation back to and through said cathode to a target area within the confines of said cathode.

8. (Previously Presented) The method according to claim 7, wherein the cathode closes the vacuumized internal chamber from the outside.

9. (Previously Presented) The method according to claim 7, wherein gold and/or molybdenum and/or tungsten and/or a compound of the metals is used for conversion of the electrons into X-ray radiation.

10. (Previously Presented) The method according to claim 7, wherein a thermionic emitter is used in the cathode.

11. (Previously Presented) The method according to claim 7, wherein a cold emitter is used in the cathode.

12. (Previously Presented) The method according to claim 11, wherein metal tips and/or graphite tips and/or carbon nano tubes are used for the cold emitter.

13. (Currently Amended) A method for producing an X-ray tube for high dose rates, in which an anode and a cathode are disposed opposite each other in a vacuumized internal chamber, electrons being accelerated to the anode by ~~means of~~ impressible high voltage, a substrate substantially transparent for X-ray radiation being used in the cathode, and a thin layer or coating of an electron emitting material being applied to the substrate, wherein;

the X-ray tube is ~~designed~~ constructed as an anode hollow cylinder with a coaxial cathode hollow cylinder inside that is substantially transparent to X-ray radiation to allow X-ray radiation to pass therethrough to a target area within the confines of the cathode.

14. (Previously Presented) The method according to claim 13, wherein the cathode closes the vacuumized internal chamber from the outside.

15. (New) An X-ray tube as defined in claim 1 further comprising:

said hollow cylinder of said cathode constructed to emit electron emissions 360° about said hollow cylinder;

said anode being constructed to emit X-rays back to said cathode about a 360° angle and through said cathode to a target area within the confines of said cathode.

16. (New) An X-ray tube as defined in claim 15 further comprising:

said anode being not transparent to said X-ray radiation.

17. (New) An X-ray tube as defined in claim 1 further comprising:

said anode being not transparent to said X-ray radiation.

18. (New) An X-ray tube for high does rates of X-ray radiation comprising:

an anode and a cathode being disposed opposite each other in an vacuumized internal chamber, electrons being able to be accelerated to the anode by impressible high voltage to produce X-ray emissions from said anode;

the cathode comprising a substrate and a thin layer of an electron emitting material such that said cathode is substantially transparent to X-ray radiation, said cathode shaped to emit electron emissions over a wide angle; and

said anode being similarly shaped as said cathode to emit X-rays back to and through said cathode and to a target area situated on the other side of said cathode from said anode over said wide angle.